Firefly Aerospace

Cedar Park, TX

https://firefly.com/

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SINCE ITS FOUNDING IN

2017

1 SBIR Award

230 Employees

NA Socioeconomic Category

2 Filed Patents (SBIR/STTR)

Solicitation:
Low Cost Expendable Launch Technology

DARPA SBIR Sponsor
SB152-008 Topic Number
Cost Savings Primary Innovation
Improved Performance Secondary Innovation

Low Cost Expendable Launch Technology

Reliable, on-demand access to space for commercial, civil, and national security users of satellite systems continues to be a challenge 60+ years after launch of the world's first operational satellite.

Firefly Aerospace, with support from DARPA has dramatically increased the reliability of accessing space by developing a simple, efficient, and streamlined pump-fed rocket engine. Most traditional rocket engines use a separate, smaller combustor – a preburner or gas generator – to power the turbopump. Firefly's Reaver engine uses hot gases from the main engine combustion chamber itself to power the turbopump, thereby eliminating the additional combustor entirely. This is the first RP-1 fueled "tap-off" cycle engine developed, and this engine cycle reduces complexity and cost of the engine while greatly increasing flight reliability.

IMPACT

The transition from large monolithic satellites to "Proliferated Low Earth Orbit" constellations of satellites numbering in the hundreds to thousands, will require reliable and responsive launch vehicles for replenishment. Incorporating "tap off" technology into future rocket engine designs increases the reliability and availability of a rocket by reducing risks associated with engine operation. These improvements translate into cost savings for launch customers while providing assured access to space.

BEYOND PHASE III

Firefly has secured private investment commitments totaling $160M through first flight of their Alpha launch vehicle and development and qualification of the Reaver engine. The company has secured two IDIQ contracts with the USAF Orbital Services Program (OSP-4) and NASA Johnson for support of future missions and has signed launch services agreements with numerous commercial and defense customers.

This research was developed with funding from the Defense Advanced Research Projects Agency (DARPA). The views, opinions and/or findings expressed are those of the author(s) and should not be interpreted as representing the official views or policies of the Department of Defense or the U.S. Government." (Approved for Public Release, Distribution Unlimited, 6/12/20)